APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,822	06/19/2001	Stephen S. Selkirk	2001-005-DSK	3535

7590   05/07/2003

Wayne P. Bailey
Storage Technology Corporation
One StorageTek Drive
Louisville, CO   80028-4309

EXAMINER
GOSSAGE, GLENN A

ART UNIT	PAPER NUMBER
2187	

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/884,822	SELKIRK ET AL.
	Examiner	Art Unit	
	Glenn Gossage	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-23_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-23_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _18 October 2001_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6) ☐ Other:

1. The title of the invention is not descriptive. A new title is required that is clearly indicative

of the invention to which the claims are directed. It appears --USING A POINTER TO POINT

TO NEW OR ORIGINAL DATA--, or other similar language, should be inserted after "DATA"

for clarity and completeness (note claims 1 and 23, lines 8-11 and claim 12, lines 9-13, e.g.).

The loss in brevity of title is more than offset by the gain in its informative value in indexing,

classifying, searching, etc. See MPEP 606 and 606.01.

2. The abstract of the disclosure is objected to because it does not enable one to quickly

determine from a cursory inspection the nature and gist of the technical disclosure as required by

37 CFR 1.72(b).

Initially, it appears "A system is ... copy mechanisms" in (page) lines 5-20 should be rewritten

using language such as --A method, apparatus and computer program product for performing an

instant copy of data. Various instant copy mechanisms are provided-- so that it is clear to what

invention the present application is directed (again see claims 1 and 23, lines 8-11 and claim 12,

lines 9-13, for example). In (page) line 21, it appears "a source or" should be changed to --

original (source) or to-- for clarity and consistency (see page 6, line 20, e.g.).

Also, one or two sentences or phrases should be added describing additionally claimed and

disclosed features. [For example, in (page) line 22, change "data. The" to

--data in an initial physical storage area or an additional physical storage area. A portion of

original data may be copied from a data location in the initial physical storage area to a second

data location in the additional physical storage area, with a pointer pointing to the portion of original data copied to the additional physical storage area. The data location may also be in the additional physical storage area, wherein a portion of original data is not copied from the initial physical storage area to the additional physical storage area and the pointer points to new data written to the data location in the additional physical storage area. The pointer may be stored in a pointer table of meta-data having a plurality of pointers including a pair of pointers representing a range of pointers that point to portions of original data that have not been changed by a write operation. The initial physical storage area may be a variable dynamically changeable mapping scheme storage area, and the--, or other similar language for clarity and completeness. See claims 2-3, 5, 7 and 11, e.g.]

Appropriate correction is required. See MPEP § 608.01(b).

3. The drawings are objected to because in Figure 2, it appears arrows/lines should be shown extending from interfaces 204 and 206 outside of "box" 200 for clarity.

In Figure 3, it appears the reference numerals 324 and 325 are missing (see page 16, lines 10-12).

In Figure 6, within "box" 608, it appears "UPDATE" should be --UPDATING-- for consistency (see page 23, line 13). Also, within "boxes" 608 and 620, "EXISTENT" is misspelled (see page 23, lines 13 and 21).

In Figure 8, it appears "TABLES 808" should be --TABLE 808-- for consistency (see page 30, lines 8-9, 14 and 17, e.g.).   Also, the three "dashed" horizontal lines extending between the tables are confusing here and should be deleted for clarity.

In Figure 9, within "box" 910, it appears "LSF" should be --LOG-STRUCTURED FILE (LSF)-- for clarity (since the acronym LSF is not "well known" or commonly used throughout the art as is "RAID" in box 912).

In Figure 10, it appears a label such as --POINTER TABLE-- should be added near reference numeral 1011 for clarity.   A representative one of the "boxes" 1012-1016 and 1020-N, and 1028 -N, should be descriptively labeled (--ENTRY-- and MAPPING TABLE ENDPOINT--, e.g.) for clarity and consistency (see page 32, lines 6 and 11).   The "box" 1044 should also be descriptively labeled (--HASH TABLE--, e.g.) for clarity.

In Figure 14, it appears the reference numeral 1406 is missing (see page 39, lines 11-12). Also, it appears --MAP-- should be inserted after "IMPLIED STORAGE ALLOCATION" (near reference numeral 1402) for clarity and consistency (see page 39, lines 8, 9, 16 and 19-23, e.g.). Additionally, it is not entirely clear whether the labels "(x) x 100" and "(x) x 100 + 200" are accurate (in this regard, also see the objection to the specification below with respect to page 40, line 16, and also note page 40, lines 10-18 generally).

In Figure 15, it appears FILE 1" in the second, third and fourth "rows" should be changed to -- FILE 2 (3, 4)--, respectively, for clarity and consistency (see page 46, lines 12-23).

In Figure 18B, it appears the figure should be labeled --Prior Art-- (see page 51, lines 10-11, e.g.).

In Figure 19, it appears the map 1970 should be relabeled --COPY DATA MAP-- for clarity and consistency (see page 53, lines 17-18). Also, within "box" 1920, it is not clear whether "NEW ORIGINAL" should be --NEW/ORIGINAL-- (see page 53, lines 13 and 22, e.g.).

In Figures 20A and 20B, it appears the map 2070 should be relabeled --COPY DATA MAP-- for clarity and consistency (see page 54, lines 14-15).

In Figures 21, 22-23 and 24A-24C, within "boxes" 2117A, 2217 and 2417, respectively, it is not clear whether "NEW NEW" (COPY DATA) is accurate.

In Figure 25A, it appears the reference numerals 2510 and 2520 are missing (see page 61, lines 24-26).

Similarly, in Figure 25B, it appears the reference numerals 2510 and 2550 are missing (see page 62, lines 15 and 18-19). Also, it appears the reference numerals 2530 and 2540 cited on page 63, lines 3 and 6 should be shown for clarity and completeness

Applicant is REQUIRED to submit a proposed drawing correction in response to this Office action. However, actual formal correction of the noted defect(s) (submission of corrected formal drawings, e.g.) can be deferred until the application is allowed by the examiner.

Also note MPEP 608.02(r) and (v).

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "means for receiving," "means for performing" and "means for writing new data" within the "apparatus" of claim 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

5. The disclosure has not been checked by the Examiner to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the disclosure. The following objections are specifically noted:

In the specification:

On pages 1-2, and throughout the specification, updated information (Serial No. and updated status, if appropriate) should be provided for the related applications. [For example, on page 1, line 15, it appears -- , now U.S. Patent No. 6,532,527-- should be inserted after "2001."]

On page 2, lines 14-15, it is not entirely clear what is meant by "apparatus and method for ... scheme," or to what a "scheme" refers here.

On page 6, lines 3 and 5, it is not entirely clear how an invention itself "provides" a system or "separates" processing. It appears "provides a system" in line 1 should be changed to --is directed to an apparatus and method-- (note claims 1 and 23, e.g.), or other similar language, for clarity. Also, in line 5, it appears "present invention separates" should be deleted and --is separated-- or --in the present invention is separated-- inserted after "requirements" in line 6 for

clarity. Similarly, in line 18, it appears "the present invention provides" should be deleted, and --are provided-- inserted after "mechanisms" in line 20 for clarity. In line 25, "of," should be --the--.

On page 9, lines 14+, the descriptions of Figures 18-24B do not appear to be consistent with the Figures or the description at page 51, lines 1+.

On page 13, lines 27-28, it is not adequately clear to what the various "means" refer in this instance.

On page 14, lines 7-8, it appears "a owning" should be --an owning--. In line 9, it appears "meta-data and" should be --meta-data, and-- for clarity.

On page 15, line 27, it is not entirely clear how an invention itself "provides" a subsystem analogous to page 6, lines 3, 5 and 18. It appears "The present invention provides a" in line 27 should be changed to simply --A--, and --is provided-- inserted after "312" in line 6, for clarity.

On page 16, line 10, it appears --device-- should be inserted after "logical" for clarity and consistency (see Fig. 3).

On page 21, line 22, "step 502" is somewhat confusing when read in conjunction with Fig. 5. It appears "step" should simply be deleted (see page 23, line 12, e.g.). Similarly, in lines 24 and 28, "step" appears to read more clearly here as --block--. See also page 22, lines 2, 6, 7, 9, 15, 18 and 21. Also in line 28, it appears "units" should be --unit-- for consistency (see Fig. 5). See also page 22, line 20.

On page 22, line 5, it appears "subsystems and selections" should be --subsystems, and selections-- for clarity. In line 16, it appears "in" should be deleted for consistency (note Fig. 5). In lines 19-20, it is not entirely clear what is meant by "receives input from data" here. In line 21, it appears "implement methodologies" should be --map methodologies for implementation-- for clarity and consistency (see lines 1-2, e.g.). In line 25, it appears "the" should be --an--.

On page 23, line 6, it appears "the" should be deleted for clarity. In lines 8-9, the proper antecedent for "the management API branch illustrated in Figure 5" is not entirely clear. In line 15, it appears --or web-- should be inserted after "internet" for consistency (see Fig. 6).

On page 24, line 9, it appears "vendor update" should be --vendors updating-- for clarity and consistency (see page 23, line 13, e.g.).

On page 25, line 1 to page 28, line 8, it appears the steps or blocks 702-714 shown in Figure 7 should be discussed or mentioned, at least briefly, for clarity and completeness

On page 28, lines 19 and 21, it appears --space-- should be inserted after "address" for clarity. See also page 30, lines 1, 5 and 18.

On page 29, line 7, "of LUN address" is not entirely understood in this context. In line 16, it appears --table-- should be inserted before "804" for consistency (note line 12). In line 22, "k" should be written out for clarity. [Should "256k" be changed to --256 kilobytes (kb)-- or --256 kilobytes (k)--?]

On page 30, line 2, it appears "addressed" should be --addresses-- for clarity. In line 23, "808" should be --**808**--.

On page 31, line 21, it appears "to" (first occurrence) should be deleted for clarity. In line 26, it appears "in" should be deleted.

On page 32, line 7, it appears "1012-N" should be changed to --1012-1016 and 1020-N-- for consistency (note that there is no entry 1018 in Figure 10).

On page 34, line 8, it appears "1111" should be deleted for clarity (note line 10). In line 27, "2" should be --2,-- for clarity.

On page 36, line 15, it is not entirely clear whether "RAID 5" should be --RAID 4-- for consistency (see page 34, lines 8 and 27, e.g.).

On page 38, line 3, it appears --(PLUN)-- should be inserted before "1222" for consistency (see Fig. 12). In line 7, "n" is not clear here (--in--?). In line 14, it appears "member" should be --members-- for clarity. In lines 23-25, the description of Figure 13 is not adequately clear. A more complete description of Figure 13 should be provided for clarity.

On page 39, line 2, it appears "1401" should be moved after "" in line 1 for clarity and consistency (see line 6).

On page 40, line 16, it appears "1125" is not accurate here (should "1125" be changed to --25--? Note the values in Figure 14.).

On page 46, line 25, it appears a reference to unallocated space should be made here for completeness (see Figure 15).

On page 48, line 2, it appears "identifying" should be --identify--.

On page 49, line 9, it appears "A1, A2...An" should be --A1, A2, ... , An--. In line 17, it

appears --mechanisms or-- should be inserted before "methods" for consistency (see line 4 and

Figure 16).

On page 51, line 11, and throughout the entire specification, all trademarks and trade names,

and their respective owners, should be properly identified. See MPEP 608.01(v). Also, it

appears elements 1810, 1830 and 1870 shown in Figure 18B should be discussed or mentioned

here, at least briefly, for clarity and completeness. In line 15, it appears "at" should be --to-- for

consistency.

On page 52, line 21, it appears "the" (first occurrence) should be deleted for clarity.

On page 53, lines 13 and 26, it appears --original-- should be inserted after "new" for clarity

and consistency (see lines 21-22, as well as Figure 19). Similarly, it appears --(original data)--

should be inserted after "data" in line 20 for clarity and consistency (see lines 14-15, e.g.).

On page 54, lines 5, 7 and 15, it appears --(copy)-- should be inserted after "new" for clarity

and consistency (see Figure 20A). In line 17, it appears --of new copy data-- should be inserted

before "2011A" for clarity and consistency (see page 55, line 8, e.g.). In lines 24-28, as well as

page 55, lines 2-9, it is not clear whether reference should be made to blocks or steps in Figure

20B instead of Figure 19.

On page 55, line 8, it is not clear whether --new-- should be inserted before "new" (note

Figure 20B). In line 23, it appears --original-- should be inserted after "new" (note Figure 21).

Also, it appears "2115 and 2116" in line 24 should be deleted, and --as new copy data 2115 and

2116-- inserted after "2150" in line 26, for clarity and consistency.

On page 56, it appears "2117" in line 4 should be deleted, and "new data" in line 9 changed

to --new copy data 2117-- for clarity and consistency. In line 8, it appears "2127" should be

deleted. In lines 12 and 13, it appears "old data" should be --old (copy) data--. In line 18, it

appears "and" should be --any--.

On page 57, lines 11-12, it appears "22 new data" should be --22, new original data-- for

clarity. In line 14, it appears "new data" should be --new new copy data-- for consistency.

On page 59, lines 21 (first occurrence) and 22, it appears "the" should be deleted for clarity.

In line 23, it appears "datadata" should be simply --data--.

On page 60, line 3, it appears "new data" should be --new copy data-- for consistency (see

Fig. 24A).

On page 63, line 3, the reference numeral "2530" is confusing as a range 2530 does not

appear to be shown in Figures 25A-25B. In line 16, it appears "needs" should be --need--

("amounts ... that need")..

On page 64, line 6, and throughout the specification, the first occurrence of all acronyms or

abbreviations should be written out for clarity, whether or not they may be considered "well

known." Accordingly, it appears "RAM, CD-ROMs" should be changed to --random access

memory (RAM), compact disc read only memories (CD-ROMs)-- for clarity.

harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-23 are provisionally rejected under the judicially created doctrine of

obviousness-type double patenting as being unpatentable over claims 1-23 of copending

Application No. 09/884,687.

Although the conflicting claims are not identical, they are not patentably distinct from each

other because the commonly assigned copending application also claims a method, apparatus and

computer program product for performing an "instant" copy of data including receiving a write

operation for writing new data to a first data location in one of an initial physical storage area and

an additional physical storage area and writing the new data to a second data location in the

additional physical storage area, including generating a pointer to the new data in the second data

location, and the deletion of a claim limitation such as that directed to storing data in the

additional physical storage area regardless of whether the first data location is in the initial

physical storage area or the additional physical storage area would have been obvious to a person

of ordinary skill in the art at the time the claimed invention was made, anticipation being the

epitome of obviousness.   The commonly assigned copending application also claims using meta-

data associated with the additional physical data area including pointers pointing to new data for

original data in the initial physical storage area and pointers pointing to new data for copy data in

the additional physical storage area.

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting

claims have not in fact been patented.

7.   Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

In claims 1 and 12, and therefore their respective dependent claims, as well as claim 23, it is

not entirely how an "operation" itself is to be received.   It is also not entirely clear what is meant

by performing an instant copy operation "on" a data location.

In claims 9-11, it is not entirely clear how the generation and storage of the pointer is

connected or related to the other elements or steps in the claims.   It appears "the pointer is

generated (stored)" in claim 9, lines 1-2 and claim 11, line 1, respectively, should be changed to -

-performing the instant copy operation includes generating (storing) the pointer-- for clarity and

consistency (see claims 20 and 22, lines 2-3, e.g.).   Similarly, in claim 10, line 1, it appears

"further comprising" should be changed to --wherein performing the instant copy operation

includes-- for clarity and consistency (see claim 21, lines 2-3, e.g.).

In claim 23, it is not readily apparent to what the "means for receiving a write operation" and

"means for performing" refer in this instance, or how they are connected or related to each other

or the other elements or "means" in the claim (how is an "operation" received?). It is also not

entirely clear to what the "means for writing new data" refers, or even to what "apparatus" is

being referred. How is the "means for writing new data" connected or related, if at all, to the

'means for receiving" and "means for performing," for example?

Applicants are respectfully reminded that while 35 U.S.C. 112 sixth paragraph permits the use

of "means plus function" language in a claim, this provision must always be considered as

subordinate to the second paragraph of 35 U.S.C. 112 (see *In re Lundberg*, 244 F.2d at 547-548,

113 USPQ at 534 (CCPA 1979)). If one employs means plus function language in a claim, one

must set forth an adequate disclosure showing what is meant by that language. If applicant fails

to set forth such an adequate disclosure, applicant has in effect failed to particularly point out and

distinctly claim the invention as required by the second paragraph of section 112. See *In re*

Donaldson Company, Inc., 29 USPQ 2nd 1845 (Fed. Cir. 1994).

In the instant case, the language of the specification and claims is such that applicant has

failed to provide an adequate disclosure showing to what various "means" refer in this instance.

The terms and phrases used in the claims must find clear support or antecedent basis in the

description so that the meaning of the terms in the claims may be ascertainable by reference to

the description (in this regard, see also 37 CFR 1.75(d)(1)).

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-23 are rejected under 35 U.S.C. 102() as being anticipated by Belsan et al ('639).

With respect to claims 1 and 23, as well as claim 12, Belsan et al (U.S. '639) discloses a

method and apparatus for performing an "instant" copy of data including receiving a write

operation to a data location in one of an initial physical storage area and an additional physical

storage area, and performing an "instant" copy operation "on" the data location, where the

"instant" copy operation includes generating a pointer to one of the new data and original data in

the data location (see column 19, lines 50-58, e.g.). Belsan et al (U.S. '639) also teaches that

new or modified data may be written to a new (additional) data location in accordance with a

write operation (see column 19, line 68 to column 20, line 14, e.g.).

Also with respect to claim 12, Belsan et al teaches that the method may be implemented using software or a "computer program product" (see column 11, lines 39-54; column 20, lines 14-28; and column 21, lines 5-16, e.g.) Which one of ordinary skill in the art would appreciate is stored in/on a computer readable medium such as a hard disk drive.

With respect to claim 2, as well as claim 13, Belsan et al (U.S. '639) teaches that the data location may be in the initial physical storage area, and that the instant copy operation may include copying at least a portion of original data from the data location in the initial physical storage area to a second data location in the additional physical storage area (a new data location) in response to receiving the write operation (see column 19, line 66 to column 20, line 14, e.g.).

With respect to claim 3, as well as claim 14, Belsan et al (U.S. '639) also teaches that the pointer may point to a portion of original data copied to the additional physical storage area (the pointer may point to the copy in the additional storage area if the original data is not to be changed, such as when the copy is used for testing or debugging, e.g.).

With respect to claim 4, as well as claim 15, Belsan et al (U.S. '639) teaches that the data location may be in a new or additional physical storage area (see column 19, line 68 to column 20, line 14, e.g.).

With respect to claims 5-6, as well as claims 16-17, Belsan et al (U.S. '639) teaches that the instant copy operation may include not copying a portion of original data from the initial physical storage area to the additional physical storage area (Belsan et al teaches that only a modified

portion of the original data may be copied (see column 9, lines 38-45), and that the pointer may

point to new (modified) data written to the data location in the additional physical storage area.

With respect to claim 7, as well as claim 18, Belsan et al (U.S. '639) teaches that the initial

physical storage area may be a variable dynamically changeable mapping scheme storage area

(see column 4, line 65 to column 5, line 7 and column 15, lines 35+, e.g.).

With respect to claim 8, as well as claim 19, the portion of original data in Belsan et al ('639)

may have a size that is different with respect to other portions of data in the initial physical

storage area (all portions of data in the initial physical storage area need not have the exact same

size).

With respect to claim 9, as well as claim 20, Belsan et al (U.S. '639) discloses that the pointer

may be generated in a pointer table of meta-data associated with the additional physical storage

area (see Figure 1, and column 4, line 65 to column 5, line 7 where Belsan et al teaches that

access information may be stored as meta-data).

With respect to claims 10-11, as well as claims 21-22, Belsan et al (U.S. '639) teaches that

access information as well as length information may be stored in a meta-data data structure, and

also teaches that the pointer may be stored in a pointer table of meta-data having a plurality of

pointers, where the plurality of pointers include a pair of pointers representing a range (or extent)

of pointers that point to portions of original data that have not been changed by a write operation

(see column 5, lines 3-7 and column 6, lines 16-18, e.g.).

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

White et al is cited as teaching a snapshot copy method for making an "instant" copy and as discussing the use of meta-data in performing a copy or backup operation similar to the present invention (see page 5, lines 13-32 and the abstract, e.g.).

Belsan et al (WO 99/13403) is cited as disclosing a snapshot copy method using a multi-level mapping table similar to the present invention.

Belsan et al ('667) is cited as also disclosing a data record copy method including a "snapshot" copy method in which a pointer is used to point to new or copied data similar to the present invention.

Haye et al is cited as disclosing a method, apparatus and article of manufacture or computer program product for performing a point in time or "instant" copy operation similar to the present invention.

Islam et al is cited as disclosing a method and apparatus for performing copy operations in a RAID data storage system.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn Gossage whose telephone number is (703) 305-3820.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks, can be reached on (703) 308-1756.

GLENN GOSSAGE
PRIMARY EXAMINER
ART UNIT 2187